UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,226	10/08/2003	Clemens T. Weijkamp	0142-0428P	5828

2292 7590 03/22/2005

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
NGUYEN, THINH H	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/680,226	WEIJKAMP ET AL.	
	Examiner	Art Unit	
	Thinh H. Nguyen	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 08 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 10/8/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 6-9, 11-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by Suzuki et al. (U.S.6,254,218)

Suzuki (fig. 13B) discloses elements of the instant claimed multicolor ink jet method (claim 1, 2) and apparatus (claim 6), including

a carriage adapted to travel (characterized by reciprocating movement of the recording head 26; col.4, line 50) relative to a recording medium in a main scanning direction and a subscanning direction orthogonal to the main scanning direction;
a plurality of groups of nozzle heads (as shown as nozzle heads 26, 26', 26" of C, Y, M, K) on the carriage, wherein each of the groups are assigned to different colors and at least one of the groups comprises a larger number of nozzle heads than the other groups (the combined number of nozzles of K color recording heads),
means (characterized by CPU 50a, fig.4) are provided for implementing a color print mode in which the printing resolution in the main scanning direction is larger for the color printed with said one group than for the other colors. (characterized by resolution of black is twice as much as other color; col.9, line 66 – col.10, line 8)

Re claim 7, the nozzle heads for different colors are staggered in the subscanning direction (see fig.5).

Re claim 8, the nozzle heads are arranged in at least three straight lines that are perpendicular to the main scanning direction and overlap one another in the subscanning direction (as shown by 4 stacked head columns, see fig.5).

Re claim 9, the group which has the larger number of nozzle heads than the other groups comprises at least one nozzle head which is offset relative to all the other nozzle heads in the subscanning direction (see head 26'K-2; fig.5).

Re claim 11, each group comprises at least two nozzle heads which are staggered in the subscanning direction (see heads 26Y, 26M, 26C).

Re claim 12, each nozzle head is integrated in an ink cartridge and has a nozzle row offset from the center of the ink cartridge, when viewed in the direction in which the ink is jetted-out, and wherein the nozzle heads are mounted on the carriage in two different orientations, rotated relative to one another by 180 deg (as shown by looking perpendicular in the paper).

Re claim 13, the lines of nozzle heads are arranged such that not more than two nozzle heads are disposed at the same position in the main scanning direction (also shown in fig.5).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Nicoloff, Jr. et al. (U.S.5,654,744)

Suzuki discloses every element of the instant claimed subject matter with the exception of the colors yellow, magenta and cyan are printed in subsequent bi-directional passes of the carriage, a portion of the black image is printed in the same pass as cyan, and a remaining portion of the black image is printed in a subsequent pass; black ink dots printed in the same pass as cyan ink dots are printed in the gaps between adjacent cyan ink dots.

Nicoloff (col.6, lines 9-27) teaches simultaneously printing with different sections (group) of printheads to thereby improving ink dry and to reduce banding. In this aspect, black ink, as suggested can be printed with other color (i.e., cyan) during the same pass or separate pass without overlapping, or printed in between any other ink without departing from the broader aspect of this teaching. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Nicoloff in Suzuki print process for the purpose of improving ink dry and to reduce banding.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Uchiyama. (U.S.5,798,776)

Suzuki discloses every element of the instant claimed subject matter with the exception of the liquid ink used for printing said at least one color has a higher surface tension than the ink used for printing the other colors.

Uchiyama (see abstract) teaches the use of higher surface tension black ink to prevent ink bleed from intermixing of a black ink with color inks. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a higher surface tension black ink compared to color inks in Suzuki as taught by Uchiyama for the purpose of preventing ink bleed from intermixing of a black ink with color inks.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Suzuki in view of Bloomberg et al. (U.S. 6,257,698)

Suzuki discloses every element of the instant claimed subject matter with the exception of the nozzle group which has the larger number of nozzle heads comprises at least one nozzle head which is aligned with a nozzle head of another group in the main scanning direction.

Bloomberg (fig.6; col.3, lines 27-47) suggests the black head section 44 has three sub-arrays J (K0, K1, K2) of jet nozzles and 312 jets (104 jets per sub-array J), but any suitable sub-arrays and number of jets could be provided. Also in a preferred embodiment the color head section 46 has three sub-arrays J (C, M, Y) of jet nozzles; one for each color ink and 104 jets per sub-array. However, any suitable sub-arrays and number of jets could be provided. The leading edge of the nozzles of the black and

color arrays of nozzles are offset at least one sub-array from each other. In this layout the print head is intended to print in one pass and then advance relative with the print medium. This process, as understood, allows ink from the previous pass time to dry. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the nozzle array arrangement of Suzuki as suggested by Bloomberg. The reasons for doing such would have been to promote ink dry between passes.

Pertinent Prior art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Kubota et al. (U.S6,530,647)

Patent Application Information Retrieval (PAIR)

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Contact Information

9. Any inquiry concerning this communication should be directed to examiner Thinh Nguyen at telephone number (571) 272-2257. The examiner can generally be reached Mon-Wed, and Thurs from 9:00A – 5:00P. The official fax phone number for the

organization is (703) 872-9306. The examiner supervisor, Dave Talbott, can also be reached at (571) 272-1934.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-1782.

Thinh Nguyen
March 14, 2004

Thinh Nguyen
Primary Examiner
Technology Center 2800